

12.(Amended) A superconducting combination, including a superconductive composition having a transition temperature $> 260^{\circ}\text{K}$,

means for passing a superconducting electrical current through said composition while said composition is at a temperature $> 26^{\circ}\text{K}$, and less than said transition temperature, and

cooling means for cooling said composition to a superconducting state at a temperature in excess of 260°K .

24. (Twice Amended) An apparatus comprising:

a transition metal oxide having a phase therein which exhibits a superconducting state at a critical temperature in excess of 26°K ,

means for maintaining the temperature of said material at a temperature less than said critical temperature to produce said superconducting state in said phase, and

means for passing an electrical [supercurrent] superconducting current through said transition metal oxide while it is in said superconducting state.

34. (Amended) A superconducting apparatus having a superconducting onset temperature in excess of 260°K , the composition being comprised of a mixed copper oxide doped with an element chosen to [create] to result in Cu^{3+} ions in said composition and a means for passing a superconducting current through said superconducting composition.

36.(Amended) A combination comprising:

a composition having a superconducting onset temperature in excess of 26°K . said

composition being comprised of a substituted copper oxide exhibiting mixed valence states and at least one other element in its crystalline structure, means for passing a superconducting electrical current through said composition while said composition is at a temperature in excess of 26°K and less than said superconducting onset temperature, and

cooling means for cooling said composition to a superconducting state at a temperature in excess of 26°K.

38. (Amended) The combination of claim 36, where said at least one other element is an element which [creates] results in Cu³⁺ ions in said composition.

39. (Amended) The combination [composition] of claim 36, where said at least one other element is an element chosen to [create] result in the presence of both Cu²⁺ and Cu³⁺ ions in said composition.

40. (Twice Amended) An apparatus comprising superconductor exhibiting a superconducting onset at an onset temperature in excess of 26°K, said superconductor being comprised of at least four elements, none of which is itself superconducting at a temperature in excess of 26°K, means for maintaining said superconductor at an operating temperature in excess of said onset temperature to maintain said superconductor in a superconducting state and means for passing current through said superconductor while in said superconducting state above 26°K.

42. (Amended) A apparatus having a superconducting onset temperature greater 26°K, said superconductor being a doped transition metal oxide, where said transition metal is itself non-superconducting and means for passing a superconducting electric current through said composition.

46. (Amended) An apparatus having a superconductor having a superconducting onset

temperature greater than 26°K, said superconductor being an oxide having multivalent oxidation states and including a metal, said oxide having a crystalline structure which is oxygen deficient a means for passing a superconducting electric current through said superconductor.

48.(Amended) A superconductive apparatus comprising a superconductive composition comprised of a transition metal oxide having substitutions therein, the amount of said substitutions being sufficient to produce sufficient electron-phonon interactions in said composition that said composition exhibits a superconducting onset at temperatures greater than 26°K

55.(Amended) A combination, comprising:

a transition metal oxide having an superconducting onset temperature greater than about 26°K, and having an oxygen deficiency, said transition metal being non-superconducting at said superconducting onset temperature and said oxide having multivalent states, means for passing an electrical superconducting current through said oxide while said oxide is at a temperature greater than 26°K, and cooling means for cooling said oxide in a superconducting state at a temperature greater than 26°K.

57.(Amended) A combination including;

a superconducting oxide having a superconducting onset temperature in excess of 26°K and containing at least 3 [non-superconducting elements] which are non-superconducting at said onset temperature,

means for passing a [supercurrent] superconducting current through said oxide while said oxide is maintained at a temperature greater than 26°K, and

means for maintaining said oxide in a superconducting state at a temperature greater than 26°K and less than said superconductive onset temperature.

58. (Amended) A combination, comprised of:

C11
a copper oxide superconductor having a superconductor onset temperature greater than about 26°K, including an element which [creates] results in a mixed valent state in said oxide, said oxide being crystalline and having a layer-like structure,

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means for passing a [supercurrent] superconducting current through said copper oxide while it is maintained at a temperature greater than 26°K and less than said superconducting onset temperature, and

means for cooling said copper oxide to a superconductive state at a temperature greater than 26°K and less than said superconducting onset temperature.

59. (Amended) A combination, comprised of:

ceramic-like
a [superconducting ceramic-like] material having an onset of superconductivity at [a] an onset temperature in excess of 26°K.,

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means for passing a [supercurrent] a superconducting electric current through said [superconducting ceramic-like] material while said ceramic-like material is maintained at a temperature in excess of 26°K. and less than said onset temperature, and

means for cooling said superconducting [ceramic-like] material to a superconductive state at a temperature greater than 26°K and less than said onset temperature, said material being superconductive at temperatures below said onset temperature and a ceramic at temperatures above said onset temperature.

64. (Amended) A combination, comprising:

a mixed copper oxide composition having enhanced polaron formation, said composition including an element causing said copper to have a mixed valent state in said composition, said composition further having a distorted octahedral oxygen environment leading to a T_c greater than 26°K.,

means for providing a [supercurrent] superconducting current through said composition at temperatures greater than 26°K and less than said T_c , and

cooling means for cooling said composition to a temperature greater than 26°K and less than said T_c .

69. (Amended) A superconductive combination, comprising:

a superconducting composition exhibiting a superconducting transition temperature greater than 26°K, said composition being a transition metal oxide having a distorted orthorhombic crystalline structure, and

means for passing a superconducting electrical current through said composition while said composition is at a temperature greater than 26°K and less than said superconducting transition temperature.

77.(Amended) A combination, comprising:

C1/c1
pub g1
a mixed copper oxide composition including an alkaline earth element (AE) and a rare earth or rare earth-like element (RE), said composition having a layer-like crystalline structure and multi-valent oxidation states, said composition exhibiting a substantially zero resistance to the flow of electrical current therethrough when cooled to a superconducting state at a temperature in excess of 26°K, said mixed copper oxide having a superconducting onset temperature greater than 26°K and electrical means for passing an electrical [super-current] superconducting current through said composition when said composition exhibits substantially zero resistance at a temperature greater than 26°K and less than said onset temperature.

84.(Amended) A superconducting combination, comprising:

C1/b
pub g1
a mixed transition metal oxide composition containing a non-stoichiometric amount of oxygen therein, a transition metal and at least one additional element, said composition having substantially zero resistance to the flow of electricity therethrough when cooled to a superconducting state at a temperature greater than 26°K, said mixed transition metal oxide has a superconducting onset temperature in excess of 26°K and

electrical means for passing an electrical [supercurrent] superconducting current through said composition when said composition is in said superconducting state at a temperature greater than 26°K, and less than said superconducting onset temperature.

86. (Twice Amended) An apparatus comprising:

C1/b
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a composition including a transition metal, a rare earth or rare earth-like element, an alkaline earth element, and oxygen, where said composition is a mixed transition [metla]

C1/b
metal oxide having a non-stoichiometric amount of oxygen therein and exhibiting a superconducting [state at a] onset temperature greater than 26°K,

means for maintaining said composition in said superconducting state at a temperature greater than 26°K and less than said superconducting onset temperature, and

means for passing an electrical current through said composition while said composition is in said superconducting state.

C1/m
109. (Added) A superconductive apparatus comprising a composition having a transition temperature greater than 26°K, the composition including a rare earth or alkaline earth element, a transition metal element capable of exhibiting multivalent states and oxygen, including at least one phase that exhibits superconductivity at temperature in excess of 26°K means for maintaining said composition at said temperature to exhibit said superconductivity and means for passing an electrical superconducting current through said composition while exhibiting said superconductivity.

C1/m
110. (Added) The combination of claim 15, where said additional element is rare earth or alkaline earth element.

111. (Added) A device comprising a superconducting transition metal oxide having a superconductive onset temperature greater than 26°K, said superconducting transition metal oxide being at a temperature less than said superconducting onset temperature and having a superconducting current flowing therein.

C1/m
112. (Added) A device comprising a superconducting copper oxide having a superconductive onset temperature greater than 26°K, said superconducting copper

oxide being at a temperature less than said superconducting onset temperature and having a superconducting current flowing therein.

113. (Added) A device comprising a superconducting oxide composition having a superconductive onset temperature greater than 26°K, said superconducting copper oxide being at a temperature less than said superconducting onset temperature and having a superconducting current flowing therein, said composition comprising at least one each of rare earth, an alkaline earth, and copper.

114. (Added) A device comprising a superconducting oxide composition having a superconductive onset temperature greater than 26°K, said superconducting copper oxide being at a temperature less than said superconducting onset temperature and having a superconducting current flowing therein, said composition comprising at least one each of a group IIIB element, an alkaline earth, and copper.

115. (Added) A device comprising a transition metal oxide having a T_c greater than 26°K carrying a superconducting current.

116. (Added) An apparatus comprising a transition metal oxide having a T_c greater than 26°K carrying a superconducting current.

117. (Added) A structure comprising a transition metal oxide having a T_c greater than 26°K carrying a superconducting current.

118. (Added) An invention comprising a transition metal oxide having a T_c greater than 26°K carrying a superconducting current.

119. (Added) A device comprising a copper oxide having a T_c greater than 26°K carrying a superconducting current.

120. (Added) An apparatus comprising a copper oxide having a T_c greater than 26°K carrying a superconducting current.

121. (Added) A structure comprising a copper oxide having a T_c greater than 26°K carrying a superconducting current.

122. (Added) An invention comprising a copper oxide having a T_c greater than 26°K carrying a superconducting current.

123(Added). A superconductive apparatus comprising:

a composition of the formula $Ba_{1-x}La_xCu_5O_{7-y}$, wherein x is from about 0.75 to about 1

and

y is the oxygen deficiency resulting from annealing said composition at temperatures from about

540°C to about 950°C and for times of about 15 minutes to about 12 hours, said composition

having a metal oxide phase which exhibits a superconducting state at a critical temperature in excess of 26°K;

a means for maintaining the temperature of said composition at a temperature less than

said critical temperature to induce said superconducting state in said metal oxide phase; and

a means for passing an electrical current through said composition while said metal oxide phase is in said superconducting state.

124. (Added) A device comprising a composition of matter having a T_c greater than 26°K carrying a superconducting current, said composition comprising at least one each of a IIIB element, an alkaline earth, and copper oxide.

125. (Added) A structure comprising a composition of matter having a T_c greater than 26°K carrying a superconducting current, said composition comprising at least one each of a rare earth, an alkaline earth, and copper oxide.

125. (Added) A structure comprising a composition of matter having a T_c greater than 26°K carrying a superconducting current said composition comprising at least one each of a IIIB element, an alkaline earth, and copper oxide.

126. (Added) A structure comprising a composition of matter having a T_c greater than 26°K carrying a superconducting current, said composition comprising at least one each of a rare earth, and copper oxide.

127. (Added) A structure comprising a composition of matter having a T_c greater than 26°K carrying a superconducting current, said composition comprising at least one each of a IIIB element, and copper oxide.

128. (Added) A transition metal oxide comprising a $T_c > 26°K$ and carrying a superconducting current.

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129. (Added) A copper oxide comprising a $T_c > 26^\circ\text{K}$ and carrying a superconducting current.

~~Non-ducted~~

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